

10/519532
DT01 Rec'd PCT/PTC 27 DEC 2004**Claims**

1. A compound having the general formula (I)

5 $M_5(AO_4)_3X$,

wherein the group $M_5(AO_4)_3$ forms an apatite structure and X is situated in the hexagonal channels of the apatite structure and includes Cu-atoms, with the proviso that the compound is not $Sr_5(VO_4)_3(CuO)$, $Sr_5(VO_4)_3(Cu_{0.894}O_{0.952})$, or $(Sr_{0.9}Ca_{0.1})_5(Cr^V O_4)_3(CuO)$.

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2. The compound according to claim 1, wherein A represents P, V or a mixture thereof and M represents Ba, Sr, Ca or a mixture thereof.

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3. The compound of claim 1, wherein X represents a mixture of Cu^{2+} , Cu^+ , O^{2-} , OH^- , F^- , Cl^- , Br^- and/or I^- .

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4. The compound of claim 1, wherein X comprises copper ions.

5. The compound according to any of the preceding claims, wherein X comprises Cu^{2+} .

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6. The compound according to any of the preceding claims, wherein linear units O-Cu-O are present in the hexagonal channels of the apatite structure.

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7. The compound according to any of the preceding claims, wherein X represents $Cu_xO_yH_z$, wherein $0 < x \leq 0.85$, $0 \leq z < 1$ and $0.5 < y \leq 1$.

8. The compound according to any of the preceding claims, wherein $0.1 \leq x \leq 0.6$.

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9. The compound according to any of the preceding claims, wherein A represents P.
10. A process for preparing a compound according to any of claims 1-9 comprising the steps:
 - (i) mixing of compounds comprising the elements M, A and X,
 - (ii) thermal treatment of the mixture in the range of 200 to 1700°C to yield a compound of the general formula (I).
11. The process according to claim 10, wherein the thermal treatment is performed for 0.01 to 60 hours.
12. The process according to claim 10 or 11, wherein the thermal treatment is performed with intermediate regrinding.
13. The process according to any of claims 10 to 12, wherein the thermal treatment of the mixture is performed in air, argon or oxygen.
14. The process according to any of claims 10 to 13, further comprising the step
 - (iii) thermal treatment of the compound obtained in step (ii) in oxygen, inert gas atmosphere or vacuum at 500 to 900°C for 0.5 to 24 hours.
15. The process according to any of claims 6 to 12 comprising the steps
 - (i) mixing of carbonates of M, $(\text{NH}_4)_2\text{PO}_4$ and Cu-compounds,
 - (ii) thermal treatment of this mixture in solid state in air at 600 to 850°C for 1 to 5 hours,
 - (iii) regrinding,
 - (iv) thermal treatment at 1100 to 1400°C for about 1 to 24 hours,

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- (v) cooling and
- (vi) regrinding.

16. Pigment comprising a compound to any of claims 1 to 9.

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17. Pigment according to claim 15, wherein X in the compound of general formula (I) comprises Cu^{2+} .

10 18. Use of a compound according to any of claims 1 to 7 as pigment, paint or as coloring additive in cements or plasters.